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How manufacturers can use their reverse supply chain: a typology of reverse supply chain roles

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Abstract

While traditional forward supply chains end with customer markets, the reverse supply chain (RSC) both begins and ends with the firm's markets. The study applies the prevalent conceptual RSC-description in the theoretical field by Guide and Van Wassenhove (2009). In the description, the RSC begins with take back of used products and physical reverse distribution. Then, the RSC inspects and sorts products to determine the right disposition strategy. Finally, the RSC ends with product recovery and resale. Even though resale of unrecovered products, internal reuse, and disposal through waste streams is not explicitly part of the description, this study does include them as disposition strategies.

Although some RSC topics have been fairly well-addressed in extant literature (e.g. product acquisition, inventory models and product disassembly), the RSC-topic remains under-explored (Pohkarel and Mutha, 2009; Kocabasoglu et al., 2007; Huscroft et al., 2013). In supply chain and operations management (OM) literature a RSC is usually seen as a straightforward one-dimensional process, e.g. as the process described in the previous paragraph. However, a RSC can perform a variety of different functions for the firm. Among the many RSC-functions are remanufacturing complete end-products for resale in primary as well as secondary markets, refurbishing of components for reuse in servicing the firms installed product base, take back of items for disassembly and direct resale or for materials recycling, performing the reverse logistical processes required for supporting a liberal return policy, etc. Based on extant literature from the supply chain management and OM fields, this study develops a conceptual typology of what roles the RSC can play in the firm's efforts of achieving higher overall economic profits. Each role in the typology encompasses those RSC-functions that support the role.

The results of the study show four distinct RSC types: The logistician, the reuser, the servicer, and the reseller. Each role has its own distinguishable objective and set of functions. Further research is suggested for typology validation. A validated typology allows examination of the relations between specific RSC types and e.g. customer service, environmental responsibility, economic profit, material consumption, etc.

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